Amendments To the Claims:

Please amend the claims as shown. Applicants reserve the right to pursue any cancelled claims at a later date.

1.-10. (cancelled)

11. (new) A method for transmitting a first and a second data signal in polarization multiplex in an optical transmission system, the method comprising:

modulating at the transmitting end the first data signal onto a sideband of a first carrier signal to generate a first sideband modulated signal;

modulating at the transmitting end the second data signal onto a sideband of a second carrier signal to generate a second sideband modulated signal;

orthogonally polarizing the first and the second sideband modulated signals to each other;

combining the first and the second sideband modulated signals into a optical multiplex signal;

transmitting the optical multiplex signal;

feeding at the receiving end the optical multiplex signal via a polarization control element to a polarization splitter which separates out the optical multiplexed signal which was transmitted into the first and second modulated signals;

converting the first sideband modulated signal to a first electrical signal and/or converting the second sideband modulated signal to a second electrical signal;

analyzing the first and/or the second electrical signal; and

dependent on the analyzing result, deriving at least one control signal for the purpose of controlling the polarization control element.

12. (new) The method according to Claim 11, wherein the sideband modulation is effected using carrier signals which have the same frequency.

13. (new) The method according to Claim 11, wherein the sideband modulation is effected using carrier signals which differ by a differential frequency (Δf) such that the spectra of the first and the second sideband modulated signals overlap, by which means the transmission bandwidth is reduced.

14. (new) The method according to Claim 13, wherein the differential frequency (Δf) is greater than one Gigaherz.

15. (new) The method according to Claim 12, wherein the sideband modulation is a single sideband modulation or a vestigial sideband modulation.

16. (new) The method according to Claim 13, wherein the sideband modulation is a single sideband modulation or a vestigial sideband modulation.

17. (new) The method according to Claim 13, wherein for a second carrier signal which differs from the first carrier signal by a differential frequency (Δf) the spectral component of the first and/or the second electrical signal is determined at the differential frequency (Δf) for the purpose of analyzing the first and/or the second electrical signal.

18. (new) The method according to Claim 17, wherein the amplitude of the first and/or the second electrical signal is controlled to a minimum at the differential frequency (Δf).

19. (new) The method according to Claim 11, wherein the first or second sideband modulated signal is delayed at the transmitting end for the purpose of decorrelation.

20. (new) The method according to Claim 12, wherein the first or second sideband modulated signal is delayed at the transmitting end for the purpose of decorrelation.

21. (new) The method according to Claim 13, wherein the first or second sideband modulated signal is delayed at the transmitting end for the purpose of decorrelation.

22. (new) The method according to Claim 14, wherein the first or second sideband modulated signal is delayed at the transmitting end for the purpose of decorrelation.

23. (new) The method according to Claim 15, wherein the first or second sideband modulated signal is delayed at the transmitting end for the purpose of decorrelation.

24. (new) The method according to Claim 11, wherein for the purpose of distinguishing the first and second electrical signals, at least one pilot tone signal is superimposed at the transmitting end on the first and/or the second carrier signal or the sideband modulated signal.

25. (new) The method according to Claim 12, wherein for the purpose of distinguishing the first and second electrical signals, at least one pilot tone signal is superimposed at the transmitting end on the first and/or the second carrier signal or the sideband modulated signal.

26. (new) The method according to Claim 13, wherein for the purpose of distinguishing the first and second electrical signals, at least one pilot tone signal is superimposed at the transmitting end on the first and/or the second carrier signal or the sideband modulated signal.

27. (new) The method according to Claim 14, wherein for the purpose of distinguishing the first and second electrical signals, at least one pilot tone signal is superimposed at the transmitting end on the first and/or the second carrier signal or the sideband modulated signal.

28. (new) The method according to Claim 11, wherein for the purpose of distinguishing the first and second electrical signals the first and second data signals are transmitted at different bit transmission rates.

29. (new) The method according to Claim 11, wherein for the purpose of distinguishing the first and second electrical signals the first and second data signals are transmitted in different data formats.

30. (new) The method according to Claim 11, wherein the optical transmission system is operated in wavelength multiplex mode.

Amendments To the Abstract:

In the English translation document, please add the section heading at page 19 line 1, as follows:
--ABSTRACT--

In the English translation document, please add the paragraph at page 19 line 1, after the newly added ABSTRACT section heading, as follows:

The invention relates to a method for transmitting at least one first and second data signal in polarization multiplex. To this end, the invention provides that, in a first step, the first data signal is, on the transmit side, modulated to a sideband of a first carrier signal for generating a first sideband-modulated signal, and the second data signal is modulated to a sideband of a second carrier signal in order to generate a second sideband-modulated signal. In a second step, the first and second sideband-modulated signal are subsequently polarized orthogonal to one another, combined to form an optical multiplex signal and transmitted. In a third step, the optical multiplex signal is, on the receive side, guided via a polarization control element to a polarization splitter that separates the transmitted optical multiplex signal into the first and second sideband-modulated signal. In a fourth step, the first sideband-modulated signal is converted into a first electrical signal and/or the second sideband-modulated signals are/is converted into a second electrical signal. In a fifth step, the first and/or second electrical signal are/is evaluated and at least one control signal for controlling the polarization control element is derived on the basis of this evaluation.